

Outpatient/ED Visits Data

Outpatient/Emergency Department Visits (ED) database contains information on patient characteristics, the nature of the ED visits and geographic region. The database provides information on “treat-and-release” ED visits, as well as ED visits in which the patient was admitted to hospital for further care. Each year, about 13% of asthma-related ED visits in Iowa were admitted to hospital. All asthma-related ED visits were included in this report.

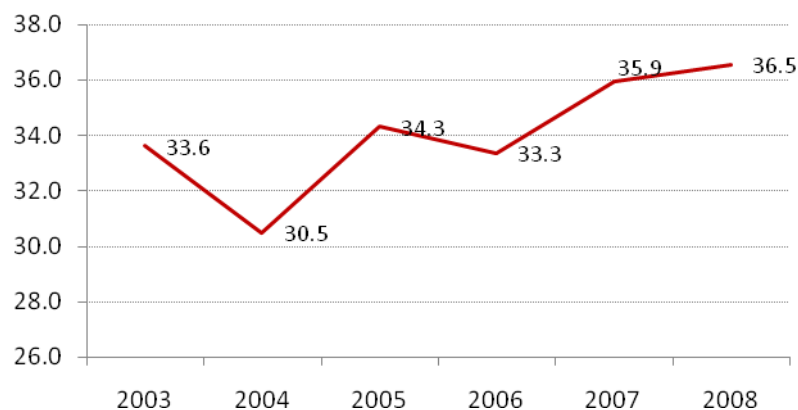
Since 2003 Iowa Hospital Association (IHA) started a new database for outpatients, the number before 2003 is not comparable to the years after 2003. In this asthma-related ED visits report, we used primary diagnosis to identify ED visits due to asthma (ICD-9-CM code 493). Patients who were treated in emergency room were included.

Only Iowa residents treated within the state were included in order to calculate state age-adjusted rate, which enables comparison to other states’ rates with different age distributions in its population. All of the age-adjusted rates are per 10,000 Iowa population and are age adjusted to the 2000 US standard population using the direct method applied to 11 age groups.

ED Visits due to Asthma

On average, about 9,800 ED visits due to asthma incurred during 2003-2008, or 34 ED visits per 10,000 residents (age-adjusted rate). Like inpatient asthma data, Iowan ED visits due to asthma were much lower than the national average (62 per 10,000) and Midwest region (60 per 10,000)¹. But, unlike inpatient data, the age-adjusted ED visit rate due to asthma was up from 33.6 in 2003 to 36.5 per 10,000 in 2008, with an average increase of 2% during the six years.

Fig. 1 Age-adjusted Rates of ED Visits due to Asthma in Iowa, 2003-2008



¹ Source: National Surveillance for Asthma – US, 1980-2004, MMWR, Oct. 19, 2007. The national and Midwest region average included in this report was the average of 2003-2004.

Emergency Department (ED) Visits due to Asthma in Iowa, 2003-2008

By Age and Gender

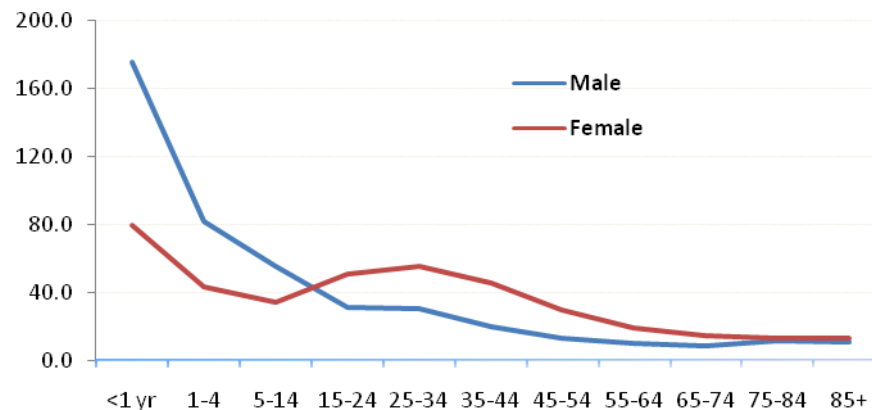
Also like inpatients, the total female ED visits rate (38 per 10,000) was higher than the male's (30 per 10,000, see the table below), but varied widely by age groups.

Females aged 35-44, 45-54 and 55-64 had more than two times higher rates than the males. In teens (15-24), young adults (25-34) and elderly group (65-74), the female/male ratio was 1.6, 1.8 and 1.8, respectively.

By contrast, children had an opposite gender ratio: males younger than 15 had the highest rates (70.3 per 10,000), nearly double that for females under age 15 (39.7 per 10,000). Male children at age 1-4 and 5-14 had 1.9 and 1.6 times higher rate than the female children, respectively.

Overall, children under 15 had the highest ED visit rates (55.4 per 10,000). Among them, newborn babies <1 year had the highest rate (128 per 10,000), followed by 1-4 (63 per 10,000) and 5-14 (45 per 10,000). ED rates due to asthma decreased quickly as people aged.

Fig. 2 Average Annual Age-Specific ED Visit Rate due to Asthma, 2003-2008



	Male Rate	Female Rate	Total	M/F ratio	F/M ratio
<1 yr	175.1	79.4	128.5	2.2	0.5
1-4	81.7	43.5	63.0	1.9	0.5
5-14	55.2	34.2	45.0	1.6	0.6
Subtotal <15	70.3	39.7	55.4	1.8	0.6
15-24	30.9	50.7	40.5	0.6	1.6
25-34	29.9	55.4	42.4	0.5	1.9
35-44	19.8	45.7	32.6	0.4	2.3
45-54	12.7	29.4	21.0	0.4	2.3
55-64	9.3	18.7	14.1	0.5	2.0
65-74	8.1	14.5	11.6	0.6	1.8
75-84	11.0	13.1	12.2	0.8	1.2
85+	10.6	12.9	12.2	0.8	1.2
Total ²	30.2	37.8	34.0	0.8	1.3

² Age-adjusted rate

Emergency Department (ED) Visits due to Asthma in Iowa, 2003-2008

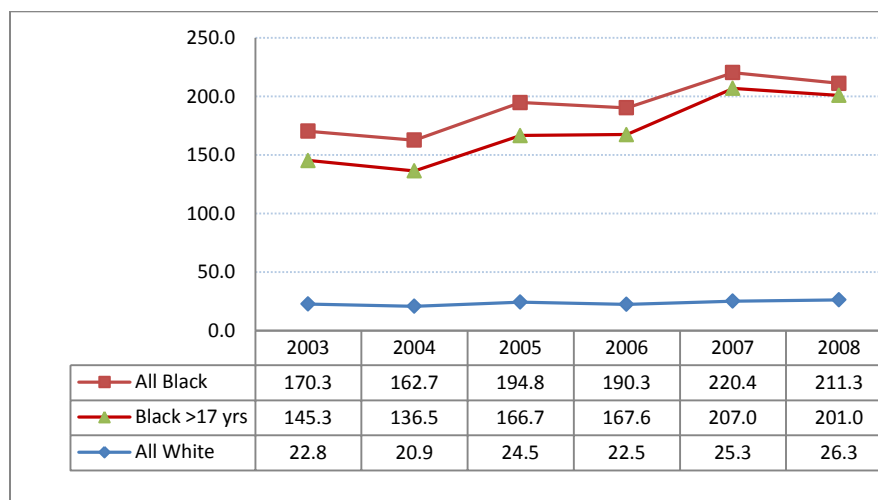
By Race

Like inpatient data, about 17% of ED visit data on race is missing. Among the remaining, 68% were Caucasian (annual number 6,600), 14% were African American (1,400). Native American and Asian/Pacific Islander were 0.4% and 0.5%, respectively.

The average annual ED visits rate for African Americans (crude rate 192 per 10,000) was 8 times higher than that for Caucasians (24 per 10,000). The rate for African Americans increased by 5% annually (average) vs. Caucasians by 3.5%.

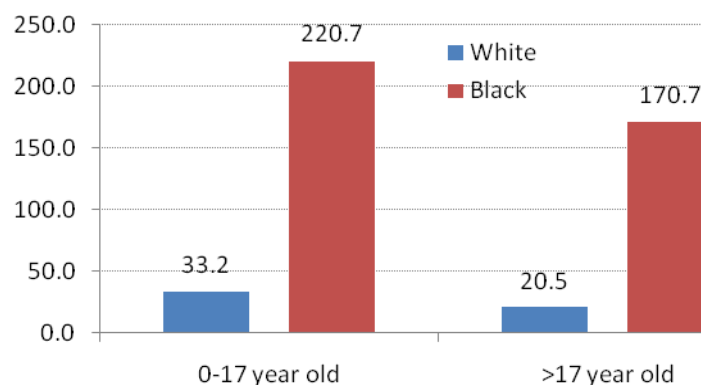
African American adults (>17 years) had an average annual increase rate at 7.4% vs. Caucasian adults at 4.5% (not shown in the chart). The average annual changes for children (0-17) for both races were lower: Caucasian children increased by 2% and African American children by 1%.

Fig. 3 ED Visit Rates (Crude Rate) due to Asthma by Race, 2003-2008



The average annual rate of ED among African American children (220.7 per 10,000) was 6.6 times higher than that for Caucasian children (33.2). For adult group, rate for African American ED visits (170.7 per 10,000) was 8.3 times higher than Caucasians (20.5).

Fig. 4 Average Annual ED Visit Rate (Crude Rate) due to Asthma, by Race and Age, 2003-2008



Emergency Department (ED) Visits due to Asthma in Iowa, 2003-2008

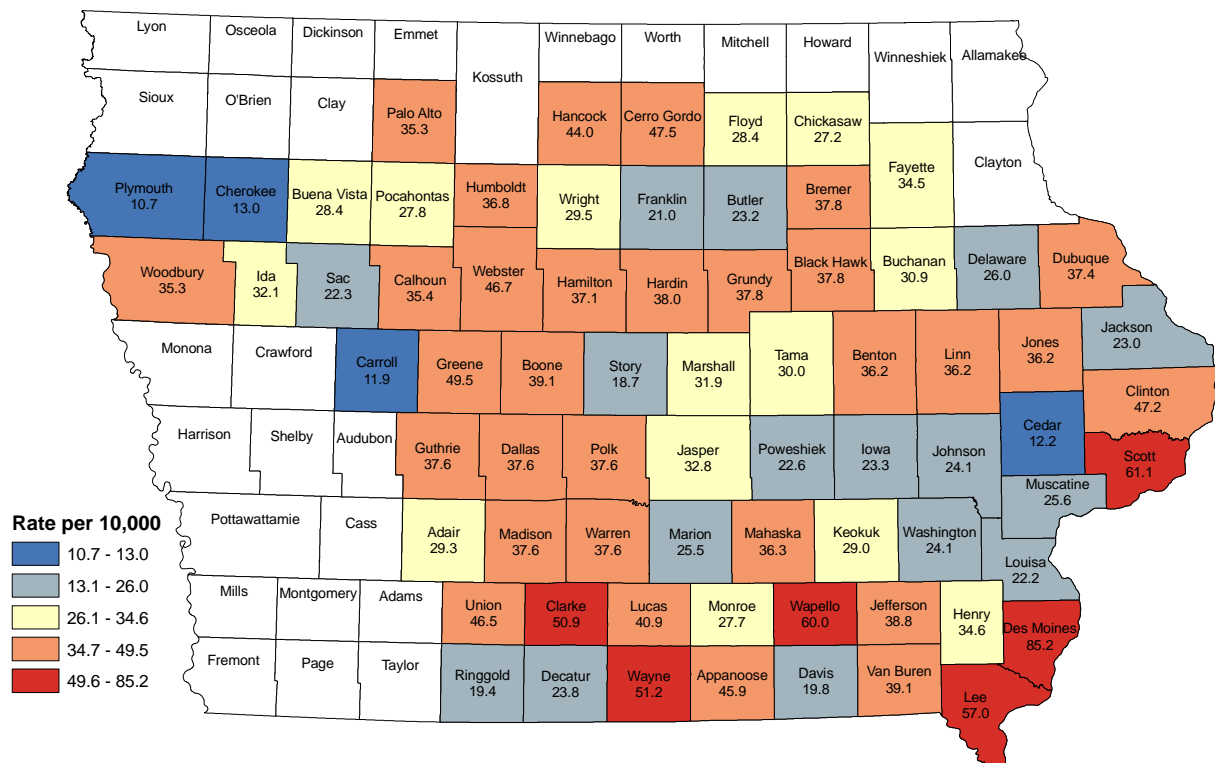
By County

Every year many Iowa residents seek medical treatments in other states, especially, for the residents on the bordering counties. Their medical records are not included in Iowa state hospital data. Therefore, we excluded these bordering counties in this section.

The ED visit rates due to asthma by county were not evenly distributed across the state. In 2008, the overall state ED rate due to asthma was 35 per 10,000 residents (crude rate). The average rate of the counties with population more than 20,000 was higher than the statewide, while the average rate of counties with population less than 20,000 was lower than the state average.

Among the counties with complete data, Des Moines County had the highest rate (85 per 10,000), followed by Scott (61), Wapello (60), and Lee³ (57). Five of the top counties are all located at the south side of the state.

Fig. 5 ED Visit Rates (Crude Rate) due to Asthma by County, 2008



³ State inpatient asthma report showed that Des Moines and Lee counties were all in the top 25% of the distribution of county rates (2000-2004).

Discussion

This report is the first state ED visits summary on the burden of asthma. As with inpatient report, this report includes counts and population-based rates for asthma-related ED visits. The data in this report indicate that asthma-related ED visits increased in both counts and rate since year 2006, and the average annual increase rate was 2% during the six years (2003-2008).

There has been a small increase in ED visits while hospitalizations have decreased. The reason for the increase in ED visits is not clear. Outpatient/ED visits data could not provide real counts and rates of individual asthma-related ED visits, for there is a possibility that the same patient may be treated multiple times for the same asthma event. However, the stable asthma prevalence rate in Iowa, as documented by Behavioral Risk Factor Surveillance Survey (BRFSS) data, may be attributed to increased education and preventive care efforts.

Like inpatient asthma data, Iowa asthma-related ED visits showed a much lower rate than the national and Midwest region rates. The national average age-adjusted rate for ED visit due to asthma was 61.5 and 63.4 per 10,000 in 2003 and 2004, respectively (the latest data available); the rates were for the Midwest was 47.2 and 73.8 per 10,000. In Iowa, the rate was 33.6 and 30.5 per 10,000 in 2003 and 2004.

ED data also showed that children under age 15 had the highest ED visit rates due to asthma, especially for boys under age 5, while the elderly had the lowest rate. Overall, females had 1.3 times higher rate than that of male. Age groups showed wide differences between gender ratios. Among them, female aged 35-44, 45-54 and 55-64 had more than two times higher rates than that of males.

The most striking difference was found, like inpatient data, in races of Caucasians and African Americans. Overall, African Americans accounted for 14% of the total ED visits due to asthma, but comprise only 2.8% of Iowa's total population (2008). The average annual ED visits rate for African Americans (192 per 10,000) was 8 times higher than that for Caucasians (24 per 10,000).

ED visit rate for African Americans increased from 170 in 2003 to 211 per 10,000 in 2008 (crude rate), with an average annual increase 5%; while Caucasians increased from 23 to 26 per 10,000 (increased by 3.5% per year).

Out of the 17 counties defined as metropolitan areas (population >50,000), 3 counties had lower rates than the state average: Story county 18.7 (Ames), Johnson and Washington 24.1 (Iowa City). These two metropolitan areas are all university cities.

Since Des Moines County had the highest ED visit rate due to asthma in 2008, we compared its age-specific rates to that of statewide. All of its age-specific rates were higher than that of state's corresponding age groups. Its age-adjusted rate (93 per 10,000) was 2.5 times higher than that of state average (36.5 in 2008). In the future, we could look into other risk factors for asthma, like race/ethnicity.